

# Cultivating Continuity and Creating Change: Women's Home Garden Practices in Northeastern Thailand.

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*ABSTRACT* The tradition of planting and maintaining home gardens is an expression of culture and represents an intense interaction between humans and plants. Forty-nine home gardens in northeastern Thailand were surveyed and found to be quite rich and diverse. The gardens contained domesticated plants, species that are not native to the area, and local non-domesticates. We focused on women's gardening practices as behaviors that create an intensive interaction with the physical and social environment and found that women are increasing their management and manipulation of non-domesticated resources. Home gardens, maintained primarily by women, are part of a continuum of resource areas that are constructed and utilized. The maintenance of specific plants in the gardens provide a source of stability in the rapidly changing cultural, social, and economic environment.

## 1. Introduction

A salient feature of many farming systems is the utilization of a wide range of resources located in crop production areas as well as in adjacent ecosystems. It is within the context of the viability of integrating traditional mixed-production systems with wild-plant resource utilization and maintenance that we discuss the connections between women's work, social reproduction of rural households, and the continuation of the resource base upon which household production is based. Recent research has pointed to the continued economic and nutritional importance of mixed resource strategies (Flueret, 1979; Johnson and Johnson, 1976; Moreno-Black, 1994; Moreno-Black *et al.*, 1994; Olge and Grivetti, 1985; Scoones *et al.*, 1992), although it is often hypothesized that environmental and cultural change lead to a decrease in the availability of gathered food. Few studies, however, have considered how populations attempt to adjust to changes in the availability of these resources.

A further shortcoming in the literature is that

researchers commonly fail to consider intra-community variations in resource use and management. Instead, they often describe these patterns as community practices. However, detailed accounts of women's work have begun to force a recognition of the importance of the ecological knowledge that women have and its relevance to conservation. Until the work of Ester Boserup (1970), women were relatively invisible in accounts of rural production systems. Since that time, a wealth of research has begun to document the nature and extent of women's activities and contributions to agricultural work, household economy and resource management (Collins, 1991; Davison, 1988; Deere and Leon del Leal, 1982; Hunter *et al.*, 1990; Guyer, 1991; Moreno-Black, 1991; Somnasang *et al.*, 1987; Rocheleau, 1991; Scoones *et al.*, 1992; Youssef, 1977). This growing literature indicates that it is very important for us to begin to obtain dynamic accounts that relate women's activities to the process of ecological change and that recognize the ways in which rural

women's interests in the environment are structured.

Such local histories of resource use increase our understanding of the ways that local systems of resource management transform themselves in response to global processes; in particular they help us evaluate the ways in which the sustainability of rural production practices are insured or undermined (Collins, 1991). In this project we address the changing relationship between people and the habitats they utilize. We specifically focus on women's gardening practices as behaviors that create an intensive interaction with the physical and social environment. We specifically avoid discussing patterns of resource use and management as community practices. Instead we highlight some of the factors affecting women as they develop and maintain resource areas thus acknowledging the complexity of their knowledge and the divisions of space, time, and responsibility that help structure rural production systems.

## 2. The Study Area

### 2.1. The Land, Deforestation, and Local Adaptations

The northeastern part of Thailand (Isan) is the largest of the country's four major geographic regions. It contains one third of the nation's population and is usually considered to be the poorest and least economically developed. Cultural distinctiveness, poor communication systems, and remoteness from markets combine to make existence difficult (Rambo, 1991). Despite these conditions, the region has been inhabited for a long time, and some of the earliest archaeological sites in Asia with evidence of agriculture, pottery, and bronze work are located in the Northeast (Higham, 1982; Solheim, 1986).

A gently sloping plateau of undulating mini-watersheds and flood plains characterize the region, which also includes a zone of hills and upland areas that ring the area (Hafner, 1990). These hills are most pronounced in the western and southern part of the region and extract moisture from airstreams during monsoon periods. Thus, while contributing to the biodiversity of the region these hills also make the area more susceptible to droughts. Low soil fertility and erratic rainfall explain the relatively low agricultural productivity of the region. Floods and drought periods are common, and only about one fourth of the farms are situated near reservoirs or other permanent water sources (Hafner, 1990; Grandstaff *et al.*, 1986).

The semiarid environment greatly influenced the traditional subsistence system and other adaptations to the habitat. Isan is characterized by its own distinctive language and culture, which are most similar to that of neighboring Laos. Traditionally, the people in the Northeast appear to have adjusted to variability in these habitat factors through the development of a combined subsistence system, in which they complemented their reliance on the staple rice crop with a large input from wild food

(Moreno-Black, 1991; Pradipasen *et al.*, 1986; Somnasang, *et al.*, 1987; Tontisirin, *et al.*, 1986). Today the diet, characterized by a staple core of glutinous rice, fish, and fish products, is still embellished with a wide variety of gathered and nondomesticated plants and animals (Moreno-Black, 1991; Ngarmsak, 1987; Pradipasen *et al.*, 1985; Somnasang *et al.*, 1987). These important items are collected from forests, fields, canals, and ponds; and they are also maintained in home gardens, upland agricultural plots, and rice paddies.

Non-domesticated plants are important as food, for other household uses, and they also provide an important source of income for villagers (Moreno-Black, 1991; 1992; Moreno-Black and Somnasang, 1993; Moreno-Black and Price, 1993). In the expanding cash economy of the region, the ability to obtain and control earnings can empower individuals; thus the motivation for obtaining cash increases. In northeastern Thailand, the sale of non-domesticated foods provides a valuable and important source of income (Moreno-Black *et al.*, 1994; Moreno-Black and Price, 1993). This cash is used to meet household needs and financial obligations. The avenues for obtaining cash continue to be limited, especially for women, and consequently marketing of cultivated and gathered food items has flourished as both a temporary and permanent means of economic employment.

Currently, deforestation in Thailand is occurring at a rapid rate; the proportion of forested area to total area has changed from 62% in 1940 to 30% in 1982 (Ramitanondh, 1989) and to 18% in 1990 (Ganjanapan, 1992). In the Northeast, however, it was estimated that in 1982 only 15% of the land area was still under forest cover (Hafner, 1990). The problem of deforestation is embedded in Thailand's social, political, and economic history. In the late 1890s the Royal Forest Department was established, however it was heavily influenced by the British logging companies. During this period the central government began to assert its claim to sole ownership of the forests. A land classification committee was initiated in 1961 and given the task of establishing 50% of the land in the country as reserved forest land. Agricultural production was to be limited to the remaining 50% that was designated as privately owned land. This has led to much of the forested land being perceived as a common property resource that is vulnerable to uncontrolled exploitation (Ganjanapan, 1992; Ramitanondh, 1989).

The amount of forested land in the Northeast has also been affected by the incorporation of several important cash crops into the production system. Three crops have dominated the areas being planted with cash crops: corn, kenaf, and cassava. The spread of these crops, especially cassava since the 1970s, has significantly contributed to the decline of forested land and forest resources because they are well suited to the marginal drought conditions and poor soils of the upland and dry dipterocarp forests that predominate in the region (Hafner, 1990). Since their

introduction, upland cash cropping has become an important source of cash for the population. Consequently, for the people of Isan, social change and economic development are complex problems. Three main factors currently impinge on these processes: 1) development programs do not appear to be taking the importance of gathered, non-domesticated plants and animals for rural village economy into consideration when attempting to implement change; 2) land availability and accessibility are increasingly being challenged as rural village life-style competes with agricultural and urbanization schemes; and 3) forests and other utilized biomes are being depleted as national needs are expanding.

## 2.2. Women's Roles in Village Society in Northeastern Thailand

Rural northeast Thai-Lao families are primarily matrilineal with matrilineal inheritance of farm land. In general, contemporary investigations of traditional rural life in Thailand indicate that woman's activities include food preparation for daily consumption and ritual purposes, active farming, gathering and foraging non-staple food, and small scale marketing (Foster, 1978; Kirsch, 1982; Mizuno, 1968; Potter, 1977; Tonguthai, 1987; Van Esterik, 1986). They are heavily involved in economic activity, particularly in the production and local marketing of fruit, vegetables, and cooked foods. Women also are the principal land owners. Thus their economic activities, in conjunction with the matrilineal residence pattern, provide an environment where they have economic power and a kin network close at hand to support them in decision making and to provide assistance in labor and child care (Kirsch, 1982; Potter, 1977). A woman's position in the family and village appears to be strong in economic terms but less so in other decision making arenas and because of male status and predominance in bureaucratic and leadership positions, it is unclear to what extent male decisions may affect women's work, position in the community, and economic decisions in terms of family income.

## 3. The Garden Study

### 3.1. Home Gardens

Food production around the household area is an ancient form of cultivation. These areas, commonly referred to as kitchen gardens, backyard gardens, or home gardens, reveal much of the culture and history of the individuals who construct them. Researchers consistently urge that home gardens be viewed as a food-, fiber-, ornamental- and medicinal-yielding system that is a vital part of a complex production system. Home gardens have been documented to provide significant nutritional, household, and economic benefits to the family; they are also places where crop-production knowledge and the skills of successive generations are learned (Bittenbender, 1985; Brierley, 1985; Kimber, 1966; Ninez, 1985; Soemarwoto

et al., 1985; Vasey, 1985; Works, 1990).

Home gardens are one of a number of different resource locales used for obtaining food items for home consumption and for sale in the marketplace. In explaining the different areas they utilize, villagers identified the following habitats: 1) home area with its garden and trees; 2) the wet rice paddy (called *na*) where rice is grown (in non-rice growing seasons there may also be a paddy garden if they have access to water); 3) the areas along the edge of the village that mark the village boundary and the paddy fields; 4) the *dong*, an area that is at the end of the paddies (this is a boundary area that can be planted and can also have wild trees but is not considered the forest); 5) the *hai* (which in this particular village was often equated with forest), characterized by considerable thinning of the trees for cassava, and 6) the *kok* (forest). The women also use several aquatic resource areas: 1) pond; 2) the swamp; 3) the irrigation canal; and 4) the river.

### 3.2. Methods

Data for the present study was collected during April, 1990 through March, 1992. Sixty households in a village of 110 households participated in intensive interviews, focus group discussions, and a survey of home gardens.<sup>2</sup> A total of 49 home gardens from the village sample were surveyed during January, February, and March, 1992. Villagers indicated that female heads of household were primarily responsible for the home gardens and consequently we surveyed each garden with the assistance of the female head of household. We surveyed the whole area around the home compound together and discussed the uses of specific plants: where they had been obtained, their classification in terms of being cultivated or wild, and how they were cared for. Specifically, during the garden survey the gardener was asked to:

- identify all of the plants in the garden;
- discuss the uses of the plants;
- indicate how plants were obtained or came to be in the garden;
- explain if the plants were classified as nondomesticated or domesticated;
- explain any plant management techniques used (e.g., transplanting, pruning, watering).

We collected voucher specimens of plants each time a plant was identified for the first time; consequently, plant specimens were not duplicated and came from a wide variety of households throughout the village. The voucher specimens were identified at Khon Kaen University and were deposited in their herbarium.

Focus group interviews were held in the village with a sample of the women gardeners. Three separate sessions were held, each involving 5 to 7 women. The focus group participants were also selected because of the diversity of their gardens and their extensive knowl-

edge about the plants. The information from the garden survey and focus group discussions was also supplemented with data obtained during the series of dietary interviews, participant observation, and famine food focus groups, all of which were conducted over a two-year period. The interviews included questions concerning gathering habits, plant use, transplanting practices, and management strategies.

### 3.3. The Village Home Gardens: Plant Diversity

The 49 home gardens contained 230 different plant species. Individual garden diversity ranged from 15 to 60 different species with a mean of 36 species. This high diversity is somewhat greater than that reported elsewhere in the Northeast (Rambo, 1991; Yongvanit *et al.*, 1990); however, the larger sample in our study makes comparisons difficult. The diversity found in the study reported here is also higher than that reported in Javanese home gardens; however, "wild species" used by the people were not included in the diversity determination in the Javanese study (Soemarwoto *et al.*, 1985). When these species are added in, the diversity figures are much more similar.

Nondomesticated plants (Table 1) were a significant and important component of the home gardens. These plants were found in 44 (88%) of the households. Twenty-nine percent (n=59) of all plants recorded during the survey were classifiable as nondomesticated species. Individual gardens varied considerably from each other ( $\bar{x}=4.0$   $sd=2.4$ ); some contained none while the most diverse garden contained 10 different nondomesticated plant species. Several plants emerged as very popular species; however, 54% of the plants were only recorded one time (Table 1). The two most popular plants, *bai yaanang*/*Tiliacora triandra* Diels (16%) and *naw mai sangpai*/*Bambusa* spp. (6%) are commonly found in the diet. Leaves of the *yaanang* plant are soaked in water, then squeezed to release a viscous liquid that is used as a base and flavoring for soups and other local dishes. Bamboo shoots are eaten in *gaeng*/Thai curry, or fermented and used in various dishes.

In addition to the plants recorded during the survey, the women gardeners indicated that they often transplanted several varieties of tubers to their home gardens; however, since these plants were not in bloom at the time, they did not appear in the survey. The most commonly mentioned tubers, *man liam/luang* (*Dioscorea alata*) and *man perm* (*Dioscorea esculenta*) are considered important famine foods. The women indicated that many of the tubers traditionally used as famine foods are hard to find now. Some wild varieties that were used in the past are no longer available. Individuals who noted that they had tubers planted in their compounds were very reluctant to remove them and expressed concern for the limited quantities that are available and the difficulty they have locating them in the forested areas near the village.

### 3.4. Plants in the Home Gardens: A variety of Uses

Plants identified in the home gardens were used for a variety of purposes — food, seasoning, medicine, decoration, religious, animal fodder, and construction. Household consumption, however, was the most important category (Table 2). They also retained plants that served household functions, like construction or as cleansers. The village women provided insights concerning the presence of these items in their gardens (Table 3). Most of the nondomesticated species had appeared spontaneously (*gurt eng*/birth themselves). A few of the women indicated that the species in their compounds had been selectively left when the forest had been cleared to build the home by their parents or grandparents. Species that were no longer frequently used, like those to make soap or paper in the past, were still tolerated. A significant proportion of the plants had been transplanted to the household areas from the wild, while others were obtained from friends, neighbors, other villages, or government agencies.

None of the plants in the home garden survey were identified as being used for cash. However, during the focus group meeting and the dietary interviews, the village women indicated that the home garden could also be a source of income for them. The paddy and the paddy garden, however, were considered more important sources of cash. The women indicated that the main factor affecting the viability of obtaining income from the home garden was its size.

The gardens themselves were used as a way to gain recognition for the village as a whole. During the course of the two year period of the project, the Thai government initiated a national competition to identify "progressive villages which were moving toward development." This village, with the encouragement of its headman, entered the contest and ultimately achieved a high level of recognition, although they did not make the final round of the competition. The villagers chose to use gardens as an expression of their "progressive/modern" practices and attitudes toward development. The women became engaged in planting flower borders around their house compounds. For the period of time that they were in the competition they worked diligently weeding and watering the home garden area. A few households carried this to an extreme by building gazebo-like structures or benches in the garden areas.

The gardeners spoke about their pride in the way that their gardening made the village look. The village's progress in the competition generated considerable excitement. After they were eliminated from the competition the garden activity waned and the flower borders were not as attentively tended. The flurry of gardening activity decreased, however the home gardens continued as a focus for more immediate needs.

**Table 1. Some Nondomesticated Plants Identified in the House Gardens.**

Local Thai Plant Name	Botanical Name	Common Name	Part Used	Uses	Management Strategy	Number of Households
<i>Put-sa/Bak tan</i>	<i>Zizyphus rotundifolia</i>	common jujube	fruit	food/eat fresh	T,S	5
<i>Klua-moa-noi</i>	-	-	leaves	food/use in gaeng	-	4
<i>Bak-wa</i>	<i>Lepisanthes rubignosa</i>	-	fruit	food/eat fresh	T,S	7
<i>Yaanang</i>	<i>Tiliacora triandra</i>	-	leaves	food/use in gaeng	T,S	22
<i>Pak-dog-jig</i>	<i>Barringtonia racemosa</i>	-	flower,leaves	food	S	2
<i>Pak cha</i>	-	-	leaves	medicinal	S	3
<i>Mak-huadka</i>	-	-	fruit	food	S	4
<i>Kha-pa</i>	<i>Languas sp</i>	wild galanga	rhizome	food	T	2
<i>Pak-kradon</i>	<i>Careya spaerica</i>	-	leaves/flowers/bud	food	T	1
<i>Wai</i>	<i>Calamus spp.</i>	rattan	shoot	food	T	2
<i>Bak-ben</i>	<i>Ebenaceae</i>	-	fruit	food	T,S	2
<i>Ton-sarp-sau</i>	-	-	leaves	medicinal	S	1
<i>Ton-yang</i>	<i>Diptherocarpus grandiflorus</i> Blanco	-	wood	construction	S	5
<i>Naaghplamoh</i>	<i>Acanthus ebracteatus</i>	sea holly	leaves	medicinal	T	1
<i>Wan som</i>	-	-	leaves	medicinal	T	1
<i>Pak-linpee</i>	-	-	leaves	food	S	3
<i>Mak mauw</i>	-	-	fruit	food	S	1
<i>Pak tiew</i>	-	-	leaves	food	S	1
<i>Pak kii lec waan</i>	<i>Cassia surattensis</i>	-	leaves	food	T,S	3
<i>Khlua, kaew poan</i>	-	-	leaves	medicinal	T	1
<i>Ton quinin</i>	<i>Azadirachta</i>	nim	leaves	food/medicine	T	1
<i>Ton sompaw/koy</i>	<i>Streblus asper</i>	Siamese rough bush	leaves/stem	papermaking/ decorative	S	2
<i>Naw mai sang pai</i>	<i>Bambusa Spp.</i>	bamboo	shoots	food	T	4
<i>Naw mai pai pa</i>	<i>Bambusa Spp.</i>	bamboo	shoots	food	T	1

T= Transplanted  
S = Spontaneous and maintained

**Table 2. The uses of the non-domesticated plants identified in the 49 home gardens during the survey.**

Uses of Non-Domesticated Plants Found in Home Gardens		
Primary Use	Number of Households	% Households
Food	42	95%
Medicinal	12	27%
Household/ Construction	12	27%
Ornamental	2	5%
Religious	1	2%

**4. The Women Gardeners: Cultivating Change and Continuity**

The home gardens reveal much about the people who construct and tend them. The women gardeners in this

study used the areas within their house compounds in a variety of ways and exerted control over them through various management strategies.

The home garden was identified as primarily the

domain of the female head of household. The villagers indicated that women have most control over this area because the home garden is an important source of fresh plants and vegetables used for home consumption. Since women are the ones who cook and consequently know what plants are needed for cooking, they

**Table 3. Methods of procurement for the non-domesticated plants recorded in the 49 house gardens which included non-domesticated plants.**

Procurement Methods for Non-domesticated Plants		
Source	Number of Households	% Households
Birth-Itself	13	75%
Transplanted from Wild	7	16%
Friend, Neighbor	5	11%
Temple	4	9%
Other Village	4	9%
Government Agency	1	2%

are also responsible for the home garden area. The village women consistently indicated that they did most of the work on the gardens and were primarily responsible for decisions concerning species, planting, care, and use of the products.

We have always had gardens here at the house.

We bring plants here so that we can have them. We go to work there, in the paddy, and when we come home if we need something to cook we have it here.

We do not have to go so far to get it.

The factor of individual control over home gardens impacted the diversity of species identified in the village gardens. Individuals develop home gardens tailored to their own preferences and to the limitations of their own circumstances. Personal constraints, such as off-farm employment, family size, and household composition, as well as personal preferences and local traditions, greatly impacted the number and variety of nondomesticated plants in the garden area.

If you have your own garden you don't have to buy vegetables; plants from others.

The home gardens in the village sample were quite rich and diverse. The gardens contained commonly domesticated plants, species that are not native to the area, and others that are local non-domesticates. The nondomesticated plants were not only tolerated when they appeared spontaneously, but a significant number of them had been actively transplanted and maintained in the home compound areas. A strong relationship was found between individual preferences and the species that occurred in individuals' gardens. Villagers were often quick to comment that a number of these items were particularly desirable because they tasted delicious or smelled delicious. The retention of traditional dietary patterns is a marker of cultural identity and these villagers are becoming the maintainers of local flora and local traditions.

The women obtained plants from a variety of sources. They harvested them from previous crops, purchased

them in the market, obtained them from relatives and friends in the village, and also got them from other villages when they saw something they were interested in growing. Attitudes concerning obtaining seeds and seedlings from others were quite similar throughout the village. The women indicated that it was possible to obtain seeds, seedlings, or tubers from other villagers by asking for the items. They commonly emphasized, however, that only small amounts should be taken, and they also stressed that this should be done for items that would only be consumed, not sold for a profit.

We also found that women often tolerated species that grew spontaneously in their yards, especially if they were useful. They transplanted species from nearby forests and other resource areas where nondomesticated plants were gathered. Many of the women also indicated that some nondomesticated items were becoming very difficult to obtain. They said they often transplanted items to their home gardens, because they were afraid that the plants were becoming extinct. They wanted to be able to have the items, so they would transplant them before the areas were cut down.

There was more forest when I was younger. We used it a lot. Food was not scarce then like it is now. My parents used to have forest land but they sold it to buy paddy.

The older women talked about how the village had been a forest when their families first moved there over 60 years ago. They spoke of how many plants and animals there had been and how easy it was to obtain food. They recognized that in some villages people were not allowed to cut the forests around the village. In contrast, since all of the nearby forest areas were privately owned the villagers we interviewed indicated they were not able to control the deforestation. They did stress that when the forest was cut, many people did so selectively, often leaving trees that are valued for food or other reasons.

Elders in the village (individuals aged 80 - 87 years) indicated that, in the past, villagers did not need to transplant non-domesticates nor manage them in any way. They recalled people beginning to do this when the elders were in their twenties. They further indicated that they had preferred not having these types of plants in their compounds because they gave an unkempt appearance to the living areas, and because they were able to procure them easily from the forests and other locations. A clear difference in the knowledge that the younger individuals had concerning transplanting non-domesticates emerged during the focus group discussions. The middle-aged adults (30-50 years of age) named more plants that they had transplanted, they discussed management techniques, and voiced concern about diminishing resources.

The local habitat conditions also greatly impact the availability of nondomesticated plants available for transplanting. The area around the village was, like much of the province, already very deforested. Much of the land had been converted to upland cassava plots, although

some small pockets of forest and indigenous trees had been left. Most of the land surrounding the village was privately owned and not subject to any government restrictions. Many of the women spoke of their concern over the deforestation they have witnessed in their lifetime and are still seeing.

We are afraid that the plants are going to die out. Now a days a lot of deforestation is going on. We bring it here so it will exist. Also we bring it so we can eat it and it will be fresh. Like *yaanang* - it will be fresh, not dry when we want to use it.

The home garden plot is also important as an informal "experimental station" where indigenous species can be transferred, encouraged, and tended as the women try and adapt them for use (Kimber, 1978; Ninez, 1987). The transplanting of wild resources into human-managed production systems allows for continued, dynamic adaptation of plant species (Altieri et al., 1987). Consequently, these gardens often represent a refuge where species and varieties are preserved. This preservation of plants is very species specific; since factors of taste preference, tradition, household needs, activities that occur in the garden area, species availability, and environmental conditions all impact gardening decisions (Fernandes and Nair, 1986; Kimber, 1978; Marten and Abdoellah, 1988; Ninez, 1987).

The movement of these items to the home area, however, marks the beginning of a change in the relationship between the people and the plant. Discussions with the villagers indicated a shift in personal relationships and a decrease in sharing of resources.

We, the housewife, decide what to grow. So we don't have to go and ask other people. If the other people grow it we have to ask. We don't want to. We don't want to ask from others.

We can get these plants in many ways. We can get them in the market, from our own seeds, from other places like the forest or paddy. We can get them from others but we only ask for a little. We only ask for a little to grow.

Once the plants are located in the personal compounds of a family, they become part of the area that has private ownership status. Availability of these items to the village as a whole may become more limited. The traditional pattern of sharing was maintained; however, with quantities limited it was quite clear that only small quantities, were still exchanged and given freely.

## 5. Conclusions

We found that the home gardens in the village sample were quite rich and diverse. The gardens contained commonly domesticated plants, species that are not native to the area, and others that are local non-domesticates. The nondomesticated plants were not only tolerated when they appeared spontaneously, but a significant number of them had been actively transplanted and maintained in the home compound areas.

A strong relationship was found between individual preferences and the species that occurred in individuals' gardens.

In this study of home gardens, we have shown that women in this village, through their individual actions and control over resource areas, are selecting certain indigenous species for transplanting and management, thus increasing the probability that these plants will be maintained over time. The forests in the Northeast have been drastically affected by the myriad of changes resulting from the rapid economic changes and population growth in the region. Home gardens, a form of traditional agriculture, provide a source of stability in face of these changes. In this context the development of a garden is an expression of a constant interaction with environmental processes.

The home garden plot is an important "experimental station" where indigenous species can be transferred, encouraged, and tended as the women adapt them for use. Consequently, these gardens can represent a refuge where species and varieties are preserved. This preservation of plants is very species specific, since factors of taste preference, tradition, household needs, activities that occur in the garden area, species availability, and environmental conditions all impact gardening decisions.

This study also revealed some important cultural, social, and economic factors that impinge on village women's gardening activities and interaction with local flora. The women gardeners in this village are motivated to maintain their home gardens by a variety of considerations. They are gardening as a way to maintain and express their autonomy and worth within the village setting. Although the cultural pattern of sharing is still maintained, individual women strive to provide for their families without needing to ask from others. The importance of economic independence is increasing as individuals become more engaged in the cash economy and economic transactions begin to predominate in the region. In spite of the fact that Thai women have high rates of participation in the labor force they are still very marginalized, exploited, and oppressed. For these rural Thai woman, independence and ability to provide for their family can partially be expressed through their gardening activity. These practices, then, can be seen as being interwoven with micro- and macro-economic processes in a variety of ways.

Village home gardens are visible to everyone in the community. Women are aware of what others have in their gardens; they know who they can ask for plants, seedlings, or seeds. Consequently a garden is an expression of an individual's preferences, interest, and gardening practices. The importance of the garden as an expression of the village's progressive attitude and development can be seen in the level of activity surrounding the maintenance and expansion of home gardens during the period of the regional competition. Just as the women see their gardens as a reflection of

themselves they also perceive them as a symbol of their community.

This research has begun to uncover some of the changing patterns of resource and habitat use as they are related to the use of local indigenous/nondomesticated food items. The rapid entry into the market economy in the Northeast since the early 1960s has changed the lifestyle considerably. It has changed the environment as forests have disappeared and as water sources have become degraded. It continues to affect in more subtle ways the use of the environment and social patterns. This can be seen in the process of moving resources into home garden areas, for example, and in managing them rather than in creating and maintaining common resource areas.

In mixed agricultural-production systems, like the Isan system, identification of the individuals who have the major role of managing native plants provides important information about the way different individuals interact with the environment, as well as information about conservation practices. The influence women have transcends the relatively small scale nature of home gardens, because they are also actively and significantly involved in garden work in the paddies and other agricultural plots. Their close tie to food choice and cooking activities greatly influences their role as maintainers of local, indigenous food complex.

The home gardens in this village are part of a continuum of resource areas that are constructed and utilized. They are the unique products of the environmental perceptions, economic factors, and social beliefs of the community. They are continually evolving, they are not static products. The home garden has a form, primarily determined by the women who construct them. The garden is also transformed through time and has social, cultural, and economic meaning. As such it exhibits and signifies continuity and change within the community.

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#### Notes

1. Various terms, such as "wild food," "natural food," "environmental food," "secondary food," etc. have been used in the literature to differentiate these types of resources from domesticates; however, the terminology is not standardized (Pei, 1987; Somnasang *et al.*, 1987; Wester and Chuensanguansat, 1994). In this paper we have chosen to use the term "non-domesticate" to refer to those plants that the interviewees indicated were not considered to be domesticated. These plants may occur in a variety of microhabitats and may be transplanted or managed by humans i.e., cultivated, but not intentionally bred, in order to obtain a particular genetic response from the plant, i.e., domesticated.
2. In this study we use the term "home garden" to include all of the area in the home compound that contains plants and is identified by the female head of home as being her home garden area. This is not entirely a culturally defined area (Kimber, 1978), but instead is a term we are using to refer to a biotic community that contains plants that were intentionally planted, as well as those that appear spontaneously and are tolerated and utilized by the people. In our terminology, the home garden includes specific areas managed through soil preparation and planting and areas around the household compound where plants occur naturally.

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